

## THE NUMBER AND DISTRIBUTION OF DOMESTICATED ELEPHANTS IN THAILAND

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### ABSTRACT

There are probably something over 5,000 domesticated elephants in Thailand. For 1986, the Ministry of Interior listed 4,633 elephants over the age of eight years, 3,451 animals registered and 1,182 unregistered; the same agency listed 5,232 elephants in 1980, corresponding to a 1.9% annual decline in listings over the six years. The Ministry of Agriculture and Cooperatives listed 3,381 elephants in 1985; the same agency had listed 11,192 elephants in 1965. Most domesticated elephants are in the north and south where there is still much forest.

### INTRODUCTION

This paper will present and briefly analyze existing data in order to demonstrate numbers and distribution of domesticated elephants in Thailand by region and by province (*changwat*). The intention is to present in a more readily digestible form valuable existing data (from two government agencies) which is difficult of access and awkward in format. This paper includes no new field research.

Basically two core data sets have been used to show domesticated elephants (1) in a table listing provinces by number of elephants, (2) in a table by regions, and (3) by maps. Other tables and figures include listings, exports, and vaccinations for earlier years (1965-1985), population data for other Southeast Asian countries, etc.

Virtually all of Thailand's 5,000 or so domesticated elephants are owned by private individuals; only 90 or so elephants owned by the Forest Industry Organization, a state enterprise, could be construed as government-owned. This situation contrasts strongly with Burma where roughly 50% of some 5,000 elephants are government-owned and where even the privately-owned elephants are susceptible to government supervision. Elephants in Thailand are basically private property to be treated howsoever the owner wishes.

Examination of either numbers or distribution inevitably elicits thoughts on the management of elephants; statistics have little value unless the problems they expose are acted upon. Clearly, domesticated elephants in Thailand are in steady decline; many suffer from habitat destruction, inadequate veterinary care, poor nutrition, lack of opportunities for reproduction, lack of employment (which also affects owners), and a host of other problems (LAIR, 1986). Nonetheless, since any discussion of such problems would need be lengthy, this paper will retain a strict focus on numbers and distribution.

## WILD ELEPHANTS

Thailand's wild elephant population is very poorly known. LEKAGUL & MCNEELY (1977a, 1977b) made a "guesstimate" of 2,600–4,450 wild elephants including seasonal migrants. STORER (1979) estimated 650–925 elephants in national parks and wildlife sanctuaries. DOBIAS (1985) estimates 1,307–1,710+ elephants inside protected areas only. Considering both protected and unprotected areas, 2,000–3,000 elephants would seem a realistic estimate. Many, if not most, of these elephants are isolated in small groups in areas suffering steady encroachment; relatively few wild elephants live in areas where there is any hope of long term survival in sizeable numbers.

The last legal capture of wild elephants was in the early 1970s. (The exact year is unknown since the granting of rights to capture was, in at least some provinces, seen as a privilege of the Governor.) There is still some illegal capture incountry but it is minor. A more significant problem is that some wild elephants are captured illegally in Burma, Laos and Kampuchea and are then smuggled into Thailand for sale. Still, such incidents are few and probably have little impact on either wild elephant populations (though there is evidence of high mortality rates in such illicit capture) or on the domesticated population into which the captives enter. The cessation of capture means that Thailand, which for centuries depended primarily on wild captives to replenish domesticated elephant numbers, must now depend solely on captive breeding.

## PAST NUMBERS OF DOMESTICATED ELEPHANTS

In 1884 there were, in northern Thailand alone, more than 20,000 elephants used in transport (SEIDENFADEN, 1967). At the turn of the twentieth century Thailand has been said to have had nearly 100,000 domesticated elephants (MCNEELY & SINHA, 1982). But by 1950 there were only 13,397 domesticated elephants in Thailand according to LEKAGUL & MCNEELY (1977a).

In 1965 the Department of Livestock Development of the Ministry of Agriculture and Cooperatives listed 11,192 elephants; in 1985 the same agency listed 3,381 elephants, corresponding to a 5.8% annual rate of decline over the 21 years (ANON., 1985). See Table 1 for 1965–1985 numbers and Figure 1 for a graphic representation.

The precipitous decline in domesticated elephants in Thailand (and other countries) can also be expressed by showing the number of human beings for each elephant for the present and, for Thailand, the past, as in Table 3. The ratio of humans to domesticated elephants (around 50:1) clearly illustrates how common elephants once were in Thailand. Such a high visibility in everyday life does much to explain the elephant's omnipresence in the arts, languages and culture of the country. It can be seen that while the human population in Thailand has increased tenfold since 1850, the domesticated elephant population is only one-twentieth of the past.

Table 1. Elephants listed, exported, and vaccinated, 1965–85. Data compiled by Department of Livestock Development, Ministry of Agriculture and Cooperatives.

	Listed <sup>1</sup>	Exported <sup>2</sup>	Vaccinated <sup>3</sup>
1965	11,192	76	27
1966	11,277	74	33
1967	11,276	77	8
1968	11,149	49	35
1969	11,022	52	43
1970	—	88	37
1971	9,665	84	50
1972	8,438	113	164
1973	9,492	43	47
1974	8,736	22	37
1975	6,915	12	65
1976	5,152	4	74
1977	6,208	—	64
1978	6,311	—	24
1979	5,843	—	33
1980	4,874	—	26
1981	3,705	—	94
1982	3,419	—	30
1983	2,988	—	19
1984	3,413	—	—
1985	3,381	—	14

1 These numbers, with the addition of Ministry of Interior statistics, have been used to construct Figure 1.

2 Many of these 694 elephants were probably newly caught, roughtrained wild animals. Many would have likely been in transit from Burma, Kampuchea and, to a lesser extent, Laos. The export of elephants is now illegal though there are still some very few exports which are basically government-to-government gifts, unlike the open trade reflected above.

3. The Thai language title for this table can only be translated as '...vaccinated against epidemic disease(s)', with no further specifics. These are probably elephants vaccinated by the Livestock Department. (Probably but few elephants were vaccinated by private veterinarians). A total of 924 elephants, an average of 44 a year, are listed.

## DOMESTICATED ASIAN ELEPHANTS ELSEWHERE

Thailand's domesticated elephants comprise roughly one-third of the approximately 15,000 domesticated elephants in the region. Only Burma, an immediate neighbor, and India can compare (Table 2). It is probable that the domesticated elephant population in every country in the region is experiencing a decline like the one in Thailand.

## REGIONS

Regions as defined for the purposes of this paper follow neither those of the nine districts of the Ministry of Agriculture and Cooperatives (MAC), which are purely administrative, nor any divisions of the Ministry of Interior (MI). Regions have been defined so as to reflect ecological and geographical conditions. The regional breakdown presented is a largely conventional one with the exception, perhaps, of the down-sweeping arms of the North. These southerly extensions, the Tenasserim mountains in the west (Tak and Kanchanaburi provinces) and the Petchabun mountains to the east (Loei and Petchabun provinces) are included in the North because they represent more or less contiguous mountains and forest. Most of Thailand's lowland forest has been logged; the country, said to be 85% forest before World War II, now has less than 15% canopy forest.

The North and South still contain many mountains, forests and elephants. The Southeast is an area with significant amounts of mountain and forest, though much fragmented; there are few domesticated elephants. Both the Northeast, a high plateau, and the Central Plains have been largely deforested; both of these regions undoubtedly held very high numbers of domesticated elephants (as well as wild elephants) in the recent past.

It is no coincidence that forested mountainous areas, where most logging takes place, often host domesticated elephants. Logging areas are, ironically, sanctuaries for domesticated elephants just as inviolate forests are sanctuaries for wild elephants. Logging provides nearly the only possible employment for elephants whose owners cannot afford to keep them if there is no profit to be made.

## THE DATA

This paper basically arranges and contrasts two sets of data for selected years. The first set (1980 and 1986) was compiled by the Registration Division of the Local Administration Department of the Ministry of Interior, and the second set (1985) was compiled by the Department of Livestock Development of the Ministry of Agriculture and Cooperatives. These bodies of data, which will be discussed separately below, are supplemented by those few other references pertinent to earlier years. Both bodies of data are issued annually, though in publications not easily traced by

Table 2. Number of domesticated elephants in Southeast Asia.

Country <sup>1</sup>	Year	Number <sup>2</sup>	Method <sup>3</sup>	
Burma	1982	5,398	C	Anon., 1982b
Thailand	1986	4,633	C	Anon., 1986
India	1986	3,000	C-E	Santiapillai, 1987
Laos	1975	1,000	E	Olivier, 1978
Viet Nam	1988	600	C	Khoi, 1988
Kampuchea	1975	600	E	Olivier, 1978
Sri Lanka	1982	378	C	Anon., 1982a
Bangladesh	1980	40	C	Daniel, 1980
Total		14,749		

1. Indonesia and Nepal also have small numbers of domesticated elephants.
2. Considering the vagaries of data gathering, the difference in years might well be ignored when comparing national populations.
3. 'C' = 'Count' and should be reasonably accurate, though probably none represents an exhaustive census; 'E' = estimate or informed opinion.

researchers. Two salient factors relate to any contemplation of either set of statistics: (1) each set has been gathered totally independent from the other (there being absolutely no coordination or cooperation between the agencies of the two ministries), and (2) in both cases there would appear to be little on-going supervision from Bangkok and consequently the quality of data probably varies greatly from province to province depending on the diligence of local officials (and their predecessors) and the resources available to them.

### Ministry of Interior

Each year the MI issues a publication of tables, the Thai title of which best translates as 'Compiled Annual Statistics'. This publication, which is only in Thai, presents tables of everything from divorces per province to number of hand guns.

The Tables in this present paper include data from 'Compiled Annual Statistics' for two years: 1980, which will be considered as a benchmark year for the recent past, and 1986, the latest year for which data is available. There were 5,232 elephants listed in 1980 and 4,633 in 1986. Listings declined at a rate of 1.9% a year over the six year period. Though most provinces show modest declines as would be expected, there are major anomalies by province, sometimes drastic declines and sometimes surprising increases. (The most striking anomalies will be discussed on page 155).

Table 3. Human beings per domesticated elephant in eight Southeast Asian countries.

Country	People (millions)	Number of elephants	People per elephant
Past (Circa 1850) <sup>1</sup>			
Thailand	5.0	100,000	50
Present (Circa 1982) <sup>2</sup>			
Laos	4.0	1,000	4,000
Burma	38.0	5,398	7,000
Thailand	50.3	4,819	10,500
Kampuchea	7.2	600	12,000
Sri Lanka	15.8	378	42,000
Vietnam	57.5	600	96,000
India	725.5	3,000	240,000
Bangladesh	95.9	40	2,400,000
Total	994.2	15,457	65,000

1 The human population numbers for Thailand in 1850 are from Ingram (1971), where they are given as 5–6 million; these numbers would seem to represent a consensus figure accepted by virtually all scholars. The elephant estimates for Thailand are from McNeely & Sinha (1981) and are for the year 1900 but would obviously be equally valid for 1850; this figure would seem plausible though it might be somewhat high – but not extremely high since there were some 13,397 domesticated elephants in Thailand as late as 1950. Even if there were only 50,000 elephants, in 1850, the ratio would still have been one elephant for every hundred people.

2 The human population figures are for 1983 and come from *Agriculture in Asia-Pacific Region* (FAO/RAPA, 1985). The domesticated elephant figures are from sources given in Table 2; most are from the early 1980s.

All elephants must, at the age of eight years, be registered by their owners and consequently data do not reflect animals under that age. It would appear that officials do not actually see all of these juveniles, the owner being most likely to leave his elephant at home when going to report to officials. Table 4 gives the total figures for 1986. (See Table 5 for a list of provinces by number of elephants; see Table 6 for elephants listed by region and province.)

Table 4. Ministry of Interior Listings of Elephants, 1986.

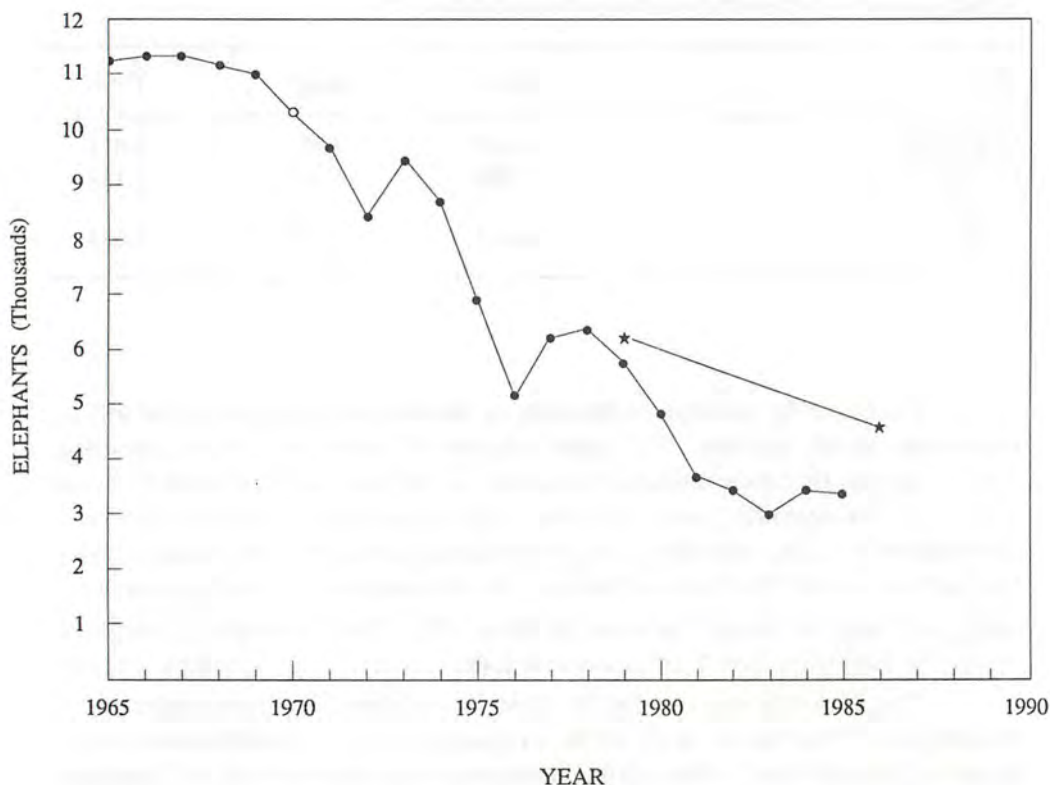
1986	Males	Females	Total
Registered	1,559	1,892	3,451
Unregistered	594	588	1,181
Total	2,153	2,480	4,633

The figures for unregistered elephants are the informed estimates of local officials and thus not totally accurate. Still, especially given the many years of data gathering, it would appear that these unregistered animals (or at least most of them) do in fact exist and, consequently, both registered and unregistered elephants have been combined to provide a single figure for the purposes of this paper; the resultant sum is referred to as 'listed' elephants or 'listings'. The proportion of registered elephants is increasing, up to 74.5% in 1986 from 68.1% in 1980. Both tables also list elephants by sex. In 1986 there were 2,153 males and 2,480 females, surely a healthy sex ratio.

The Thai language title for the table for registered elephants might best be translated as "Number of draft animals registered with an identification card of physical characteristics." (This card is called *dtua ruubpa phan* in Thai.) Elephants are not required to be branded (or marked by any other means) and numbered, the lack of which obviously poses significant opportunities for confusion, obfuscation, evasion, etc., especially considering that officials do not actually see or examine all animals. Neither strictly enforced registration procedures nor extensive research will be feasible until all elephants are marked and thus easily identifiable to any officials, law enforcement officers, scientists, etc.

The same MI tables also include horses, oxen, water buffalo, donkeys and mules. In 1986, for comparison's sake, there were listed 7,456,555 oxen and 7,559,660 water buffalo. These numbers represent 31% increase in listings (if not actual animals) for oxen and 15% for water buffalo between 1980 and 1986; during the same six year period domesticated elephant listings suffered an 11% decline.

The parameters of this registration-listing procedure should be explored, especially since such procedures and their efficiency probably vary greatly from province to province and thus any clear judgement concerning accuracy, particularly for unregistered elephants, must await extensive surveys at local level. The Registration Division in Bangkok would seem concerned, as is its mandate, only with uncritically compiling the local statistics. Except for the identification card itself, it would appear that the data gathered is not used for any larger purpose such as conducting economic analysis, monitoring the birth rate, assessing demographic conditions, etc.



- Department of Livestock Development, Ministry of Agriculture and Cooperatives. (Anon., 1985)
- Data not available
- ★ Registration Division, Local Administration Department, Ministry of Interior. (Anon., 1980; 1986)

Figure 1. Domesticated elephants in Thailand, 1965 – 1985.

### Ministry of Agriculture and Cooperatives

The base data from *Yearly Statistic Reports, 1985* (the latest year available) simply gives the number of listings for each province; the total for 1985 was 3,381 elephants. Data comes from each Provincial Livestock Office.

One table ('Number of Livestock in Thailand') presents the number of listings by province for the years 1965 – 1985; this data has been used in constructing Table 1 and Figure 1. The 'dips' for the years 1971 – 73 and 1975 – 77 illustrate the



Table 5. Domesticated elephants by number per province, 1986. Data compiled by the Registration Division, Local Administration Department, Ministry of the Interior.

1. Suratthani	581	24. Lamphun	28
2. Chiangmai	488	25. Nakhonratchasima	24
3. Tak	484	26. Trang	21
4. Maehongson	363	27. Chiangrai	19
5. Uttaradit	287	28. Yala	19
6. Phrae	273	29. Uthaitani	19
7. Lampang	266	30. Sukhothai	18
8. Nan	214	31. Nakhonnayok	16
9. Nakhonsrithammarat	203	32. Prachuabkhirikhan	14
10. Chumphon	194	33. Narathiwat	14
11. Kanchanaburi	156	34. Khonkaen	10
12. Surin	128	35. Sakonnakhon	5
13. Phitsanulok	117	36. Chaiyaphum	5
14. Krabi	115	37. Pattani	4
15. Loei	114	38. Kamphaengphet	4
16. Phetchabun	102	39. Saraburi	3
17. Udonthani	69	40. Bangkok	3
18. Phangnga	58	41. Chonburi	2
19. Buriram	52	42. Prachinburi	2
20. Phattalung	44	43. Kalasin	1
21. Ranong	31	44. Yasothon	1
22. Songkhla	30	45. Ratchaburi	1
23. Nakhonsawan	30	46. Chainat	1
Total			4,633

danger of equating listings with actual elephants. Other tables in *Yearly Statistic Reports* also give numbers of exported elephants number of vaccinations over the same period; these have been included in Table 1 as well.

One whole section of *Yearly Statistic Reports, 1985* contains several tables listing elephants inspected and logged at Quarantine Stations, e.g., "Number of Animals from Northern and North-Eastern (*sic*) for trade in the Central Part". These tables suggest the possibility of using Quarantine Stations to monitor the movements and activities of elephants.

Table 6. Number of domesticated elephants by region and province. 1980 and 1986 data compiled by the Registration Division, the Local Administration Department, Ministry of the Interior. 1985 data compiled by Department of Livestock Development, Ministry of Agriculture and Cooperatives.

	Min. of Interior		M.A.C.
	1980	1986	1985
<b>WHOLE COUNTRY</b>			
North	3,445	2,929	2,255
South	1,394	1,328	838
Northeast	313	295	223
Central	55	57	30
Southeast	24	20	26
Bangkok	1	4	9
Total	5,232	4,633	3,381
<b>NORTH</b>			
Uttaradit	618	287	214
Petchabun	467	102	200
Tak	465	484	536
Chiangmai	406	488	293
Phrae	299	273	244
Maehongson	273	363	301
Lampang	205	266	104
Nan	162	214	46
Sukhothai	154	18	87
Kanchanaburi	152	156	51
Loei	104	114	0
Chiangrai	54	19	52
Phitsanulok	44	117	102
Lamphun	42	28	0
Phayao	0	0	25
Total	3,445	2,929	2,255

\*The Ministry of Interior data used to construct this Table and Table 1 consists of two tables, registered and unregistered elephants by province, both tables listing elephants by sex; see Table 4 for national totals by registration status and gender.

Table 6. (continued)

	Min. of Interior		M.A.C.
	1980	1986	1985
<b>SOUTH</b>			
Suratthani	610	581	0
Nakhonsrithammarat	214	203	130
Chumphon	177	194	131
Krabi	119	115	62
Phangnga	70	58	157
Ranong	44	31	226
Songkhla	39	30	17
Yala	32	19	21
Phattalung	26	44	32
Trang	22	21	36
Prachuabkhirikhan	20	14	0
Narathiwat	13	14	22
Pattani	8	4	0
Satun	0	0	4
Phuket	0	0	0
Total	1,394	1,328	838
<b>NORTHEAST</b>			
Udonthani	125	69	37
Surin	84	128	104
Buriram	50	52	25
Nakhonratchasima	28	24	0
Khonkaen	13	10	10
Sakonnakon	5	5	0
Chaiyaphum	5	5	33
Kalasin	3	1	0
Yasothon	0	1	0
Roiet	0	0	5
Mukdaharn	na	0	4
Nongkhai	0	0	4
Nakhonphanom	0	0	1
Maharakham	0	0	0
Sisaket	0	0	0
Ubonratchathani	0	0	0
Total	313	295	223

Table 6. (continued)

	Min. of Interior		M.A.C.
	1980	1986	1985
<b>CENTRAL PLAINS</b>			
Uthaithani	22	19	6
Nakhonsawan	21	30	14
Kamphaengphet	6	4	8
Ratchaburi	6	1	0
Saraburi	0	3	0
Phichit	0	0	2
Lopburi	0	0	0
Phetchaburi	0	0	0
Suphanburi	0	0	0
Total	55	57	30
<b>SOUTHEAST</b>			
Nakhonnayok	16	16	0
Prachinburi	6	2	5
Chonburi	2	2	15
Chachoengsao	0	0	2
Chantaburi	0	0	4
Rayong	0	0	0
Trat	0	0	0
Total	24	20	26
<b>BANGKOK AND ENVIRONS</b>			
Bangkok*	1	3	2
Nakhonpathom	0	0	7
Chainat	0	1	0
Ten other provinces	0	0	0
Total	1	4	9

\*Bangkok metropolis, or Krung Thep Mahanakhon

### Anomalies in the Data

Considering the MI figures for 1980 as the base year, there are basically four kinds of anomalies to consider by province:

1. Large decline in MI listings in 1986.
2. Large increase in MI listings in 1986.
3. MAC listings significantly lower than MI.
4. MAC listings significantly higher than MI.

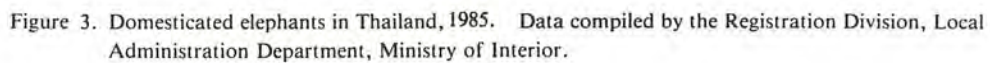
(1) Five provinces among them (Uttaradit, Sukhothai, Petchabun, Chiangrai and Udonthani) all showed extremely low MI listings in comparison with 1980; collectively there were 1,418 listings in 1980 but only 495 in 1986. (Some other provinces showed the same effect but to a lesser degree.) Such figures far transcend any normal decline, even one caused by a high mortality rate or by massive migration to other provinces – of which there is no sign. Clearly something was amiss with registration procedures and it is impossible to tell whether the fault lies in the 1980 data or the 1986 data or, possibly, both. It is entirely plausible that the 1980 figures were very high, listing elephants that had long since died, but it would seem more likely that registration and inspection efforts have slackened. For Petchabun, Sukhothai and Chiangrai, at least, the higher listings of the MAC argue for the latter.

(2) There seven instances of MI listings increasing dramatically. Chiangmai was up 20% to 488; Nan up 32% to 214; Maehongson up 33% to 363% to 266; Surin up 52% to 128; Phattalung up 69% to 44 and Phitsanulok up 166% to 117. As with the above data on declines, such extreme increases are unlikely, either through births, illegal captures from the wild or immigration from other provinces. Such increases are almost certainly a result of intensified registration efforts.

(3) Normally, the MAC listings are some what lower than the MI listings, reflecting the fact that MAC totals are 73% of MI totals. But there are some instances where the MAC listings are far below MI listings. The single greatest anomaly is for Suratthani where the MI has 581 listings and the MAC none.

(4) MAC lists some 677 elephants (a) in provinces where MI lists none at all, or (b) in provinces where MAC numbers exceed MI numbers. In the first case, MAC lists 58 elephants in 10 provinces where MI lists none, but (not surprisingly) 25 of these are from the newly formed province of Phayáo, where actual numbers are probably in excess of the figures of either Ministry. In second case, MAC has 619 listings in excess of MI listings in 13 provinces; most striking are Sukhothai where MAC lists 69 more elephants, Petchabun (98 more), Phangnga (99 more), and Ranong (195 more). Some of these animals might be listed in one province by the MI and in another province by the MAC, i.e., once in their birth place and once in their workplace. Still, many of the 619 MAC listings in excess of MI are probably not listed at all by the MI.





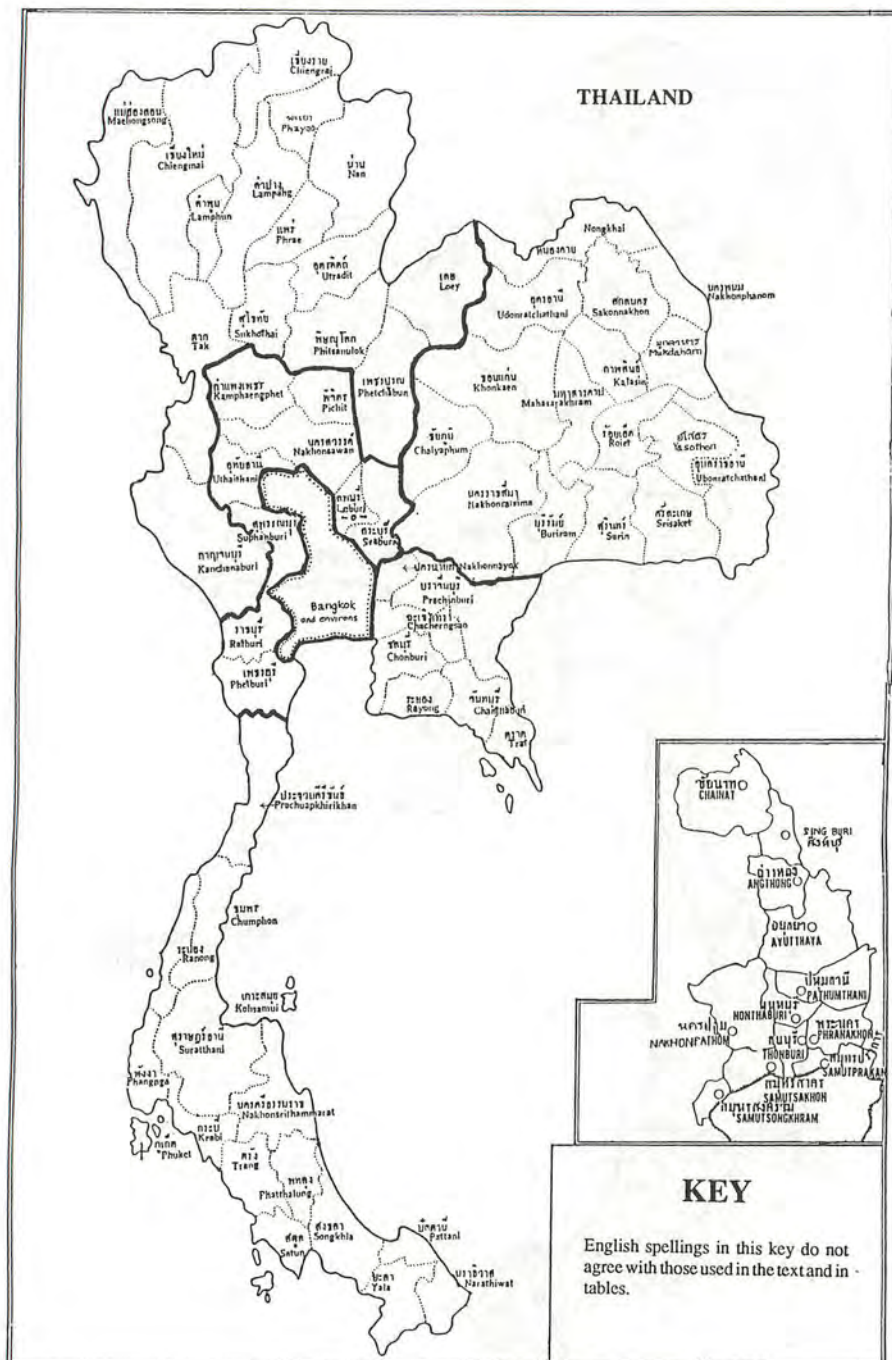


Figure 4. Key to Provinces of Thailand.



## CONCLUSIONS

Provisionally accepting the accuracy of the Ministry of Interior's total listings of 4,633 domesticated elephants for the year 1986, it is also necessary to consider (1) elephants under 8 years, (2) elephants listed by the MAC but not the MI (excluding elephants listed in a different province by MAC), and (3) an undetermined but probably low number of animals unlisted by either agency. Considering these factors, there are probably over 5,000 domesticated elephants in Thailand.

Numerous anomalies suggest that there should be some effort to coalesce, or at least coordinate, the efforts of the two ministries. Two separate efforts can initially be rationalized by their value as an independent cross-check, but it would be far better if the two sets of data were used to correct each other.

For both ministries, the efficacy of the registration-listing process probably varies greatly from province to province. While verifying data by examining all elephants in the field would be a long and expensive task, it is likely that questionnaires and in-depth interviews with officials in the major elephant-holding provinces would do much to clarify the situation.

It is clear that both sets of data for as many years as possible should be put into a relational database so as to facilitate comparisons with the past and, more importantly, so that once each year's new data is entered, all sorts of parameters are instantly accessible: increases or decreases in MI listings and/or registrations, proportions of listings to registrations, MI versus MAC listings, provinces by numbers of elephants listed therein, etc. Even new maps could be generated automatically. Probably a commercially available database would be adequate.

Ultimately such a database should be expandable to include biodata on individual animals (age, sex, reproductive history, etc.) in order to come to an understanding of population dynamics after the model of CAUGHLEY (1980). The same database could be used to keep data on other aspects of management such as veterinary care, breeding, ownership, work history, etc.

Clearly, Thailand's domesticated elephants are declining at steady rate; and although some of the causes are apparent (destruction of forests, lack of traditional employment, lack of income for owners, prohibition of capture of wild elephants, low breeding rates, inadequate veterinary care, etc.), the exact ways these problems manifest themselves and affect one another will not be clear until there has been broad basic research. Such research would be much aided by a registration-listing database shared by all relevant agencies and researchers.

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